Alg. 2 Warm Up # 7-4 Short Quiz first.

Start the Warm Up when you are done.

1. solve for x:

$$\frac{2x - 5}{3} = \frac{1}{x}$$

2. solve for y:

$$2(x^2 + 3x + 4) = y - x(x + 8)$$

3. Find the intercepts for # 2

HW Questions:

2-139. Write the equation $y = x^2 + 7x - 8$ in graphing form.

$$y = x^2 + 7x + \frac{49}{4} - 8 - \frac{49}{4}$$

$$y = \left(x + \frac{7}{2}\right)^2 - \frac{8}{1} \cdot \frac{4}{4} - \frac{49}{4}$$

$$y = \left(x + \frac{7}{2}\right)^2 - \frac{81}{4}$$

2-140. You are standing outside the school, waiting to cross the street, when you hear booming music coming from an approaching car.

a. Sketch a graph that shows the relationship between how far away from you the car is and the loudness of the music.

b. Which is the dependent variable and which is the independent variable?

how loud the music is depends on how far away the car is.

Loudness of music is dependent variable.

2-141. The Green Streak Taxi Company charges a \$3.00 base fee plus \$2.50 per mile. The cab driver sets his meter at \$3.00 and the meter adds \$0.25 each one-tenth of a mile. Draw a graph to represent this fare structure. Describe the domain and range of your graph.

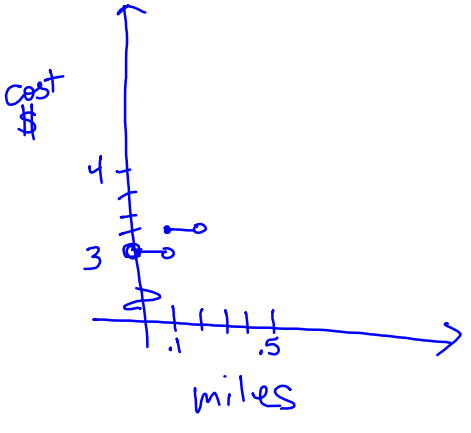
cost depends on distance

(y)

dom: $x \geq 0$

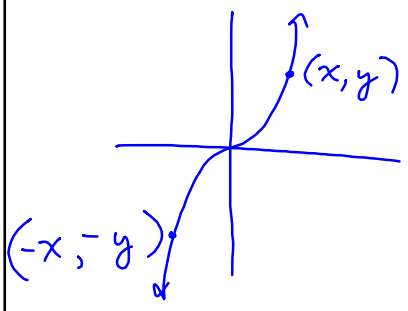
range: $y \geq 3$, skips by 0.25

$y = 3, 3.25, 3.5$



2-142. Write an equation for a function that is odd, and explain how you can tell it is odd from its graph, its table and its equation.

$y = x^3$



x	y
1	1
-1	-1
2	8
-2	-8

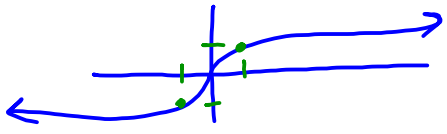
$y = x^3$

$y = (-x)^3$

$y = -x^3$

$f(-x) = -f(x)$

$y = \sqrt[3]{x}$



2-143. Explain the difference between the graphs of $y = \frac{1}{x}$ and $y = 4(\frac{1}{x+5}) + 7$.

2-144. Multiply the expressions in parts (a) through (c) to remove the parentheses.

a. $(x-1)(x+1)$ b. $2x(x+1)(x+1)$ c. $(x-1)(x+1)(x-2)$

d. Find the x- and y-intercepts of $y = x^3 - 2x^2 - x + 2$. The factors in part (c) should be useful.

$0 = (x-1)(x+1)(x-2)$

$x = 1, -1, 2$

$(1,0)$ $(-1,0)$ $(2,0)$

2-145. Solve the following systems of equations. In other words, find values of a and b that make each system true. Be sure to show your work or explain your thinking clearly.

a. $2 = a \cdot b^0$ $\rightarrow a = 2$

$\frac{1}{2} = a \cdot b^2$

$\frac{1}{2} \cdot \frac{1}{2} = \frac{2b^2}{2}$

$\sqrt{\frac{1}{4}} = \sqrt{b^2}$

$b = \pm \frac{1}{2}$

b. $\frac{1}{2} = a \cdot b^0$ $\rightarrow b^0 = 1$

$2 = a \cdot b^2$

so $a = \frac{1}{2}$

2-134 Transform: $y = \pm\sqrt{25 - x^2}$

a) horizontal shift left 2

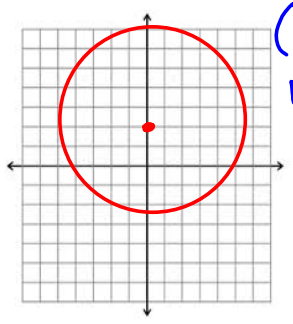
$y = \pm\sqrt{25-(x+2)^2}$

center $(-2,0)$

$r = 5$

b) vertical shift up 2

$y = \pm\sqrt{25-x^2} + 2$



$(0,2)$

$r = 5$

General Equation (with h, k, and 25 in it)

Why is there no vertical stretch or compression factor "a"?

$$y = \pm\sqrt{25-(x-h)^2} + k$$

2-135. Write your general equations for a circle in standard form by rewriting the equation $y = \pm\sqrt{-(x-h)^2+25} + k$ to isolate 25 on one side of the equation. What information does the locator point (h, k) give about the graph of the circle?

$y = \pm\sqrt{-(x-h)^2+25} + k$

$-k \qquad\qquad -k$

$y - k = \pm\sqrt{-(x-h)^2+25}$

Now square both sides.

Keep going ☺

$(x-h)^2 + (y-k)^2 = 25$

center (h, k), $r = 5$

2-136. A circle has a special characteristic, its radius, which defines its size.

a. Refer back to the graph of $x^2 + y^2 = 25$. What is the radius? How is the radius of the circle related to the equation?

b. What would be the equation of a circle that has its center at $(5, -7)$ with radius 10? With radius 12?

c. Now generalize the connection between the radius and the equation of a circle. Write a general equation for a circle with any center (h, k) and radius r.

d. Given the equation $(x-3)^2 + (y+7)^2 = 169$, how can you find the radius of the circle?

$(x-h)^2 + (y-k)^2 = r^2$

$(x-5)^2 + (y+7)^2 = 100$

2-137. Consider the equation $(x-4)^2 + (y+1)^2 = 16$.

a. What is the shape of the graph? How can you tell?

b. What information can you learn about the graph just by looking at the equation?

c. Sketch a graph of $(x-4)^2 + (y+1)^2 = 16$.

HW: 2-

#146--->152

Classwork Week 7
Warm up on top
Salmon
Yellow